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ABSTRACT

Rural teachers are often undertrained in the identification and education of gifted students. This paper describes the principles and development of an online introductory course in gifted education that could meet the need for rural teacher training. Using the philosophy that learners construct their own knowing, the system for developing an online course must be consistent with the idea of authentic problem solving. Learners are then able to transform information into knowledge. To promote active learning, the instructional system contains primary source materials, support, and information to manipulate. Content is presented from diverse perspectives via multiple modes of representation. The teacher coaches and helps students analyze learning and problem-solving strategies. Tasks are accessible to learners when they are ready for them and have patterns that can be transferred to future tasks with scaffolding. The design is holistic and spiral, allowing learners to return to the content at successively higher levels of understanding. E-mail, a listserv, and interactive databases encourage the development of a collaborative learning community; 15 characteristics of such a community are listed. Course development included development of the syllabus, with instructions and links to other course components; a threaded discussion database for asynchronous student interaction; a database of products and projects created as part of course requirements; a multigenerational archive; and the home page. (Contains 14 references.) (SV)

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# DESIGNING AN ONLINE, INTRODUCTORY GIFTED EDUCATION COURSE

Although many states may have mandates to identify and serve children who are gifted (Stephens & Karnes, 2000), often the teachers who provide such services often are not highly prepared in terms of education and experience. In Oklahoma, there is no mandate for teacher preparation to identify and serve gifted children and youth. This situation leads to undertrained personnel perpetuating the identification and educational services of the 1970s, rather than launching innovative programs. The problem is particularly acute in rural areas where a diverse student population demands the application of recent promising practices investigated though the Jacob Javits Gifted Education funds in the 1990s. A likely response to resolving the personnel preparation issues in gifted education in rural areas is to provide an introductory course that surveys the field of gifted education and includes current theory, research and practices. Courses using innovative technology such as computer mediated learning show promise in reaching such rural areas.

The purpose of this paper is to describe the process and content of such a course. Principles of curriculum differentiation (Tomlinson, 1995) by content, process and product (Maker & Nielson, 1996) are implemented as an example of appropriate strategies for the education of students who have gifts, talents, or high potential. The course development is described according to the philosophy for its instructional design system, the collaborative role of teachers and learners, and the essential components to include for posting the course online. The essential components are presented as those related to the technological process for computer-mediated learning and the content and product of the course.

## Philosophy for the Instructional Design System

Learning is an active process. Using the philosophy that learners actively construct their own knowing (Vygotsky, 1978, 1986, 1987), the system for developing an online course must be consistent with the idea of authentic problem solving in learning. Learners are then able to transform information into knowledge. The Framework for Understanding Educational Encounters (Montgomery, 1987) helps articulate three conceptual models of learning. Transmission learning is passive acquisition of information from an instructional source, usually teacher directed. Translation learning is interactive between the teacher and the learner within the content providing challenge to the learner. The third conceptual model is Transformation learning which occurs as knowledge is constructed with and among the learners involved.

Active learning is required if learning is to take place in any of the three conceptual models. Knowledge cannot effectively be acquired solely from an inactive, one dimensional, external source, e.g. through the external presentation of information. Knowing is produced by some action on the part of the learner. Readiness for learning relates to prior knowledge, developmental ability, and motivation. Reality is filtered through the learner's belief system, prior knowledge, experiences, and culture. This filtering forms the basis for interaction with the environment. The pursuit of student questions should be valued highly since these are interests of the learner. The curriculum in such an instructional system contains primary source materials, support, and information to manipulate.

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The Instructional System has content to be learned presented from diverse perspectives. The learner has access to multiple modes of representation. The teacher coaches and helps the learner analyze strategies used to learn and to solve problems. When a student makes an error, the information is used as an opportunity to get feedback on the student's learning. Self-evaluation occurs as opportunity for learning how to correct the work emerges and is revealed. When the learner perceives the task as challenging and accomplishable, participation is seen as profitable, important, and interesting. Tasks perceived as too difficult are avoided. Tasks must be accessible to the learners when they are ready to do them and should be designed to invite the students to make decisions (just-in-time learning and problem solving). They are open ended and invitational to stimulate questions. Tasks encourage students to use their own methods to enhance creativity. They have patterns that can be learned and transferred to future tasks with scaffolding. Tasks are authentic and enjoyable, and the developed products have authentic audiences

This design model is holistic and spiral. The learner returns to the content at successively higher levels of understanding and processing in order to create new materials and make decisions based on a variety of perspectives. The learner uses objectives as heuristic design guides, provides multiple layers of objectives, designs content to fill in knowledge gaps, and uses alternative methods of metaphorical thinking. When defining content, the learner uses multiple approaches such as cases, stories, rules, principles, and procedures.

**Collaborative Relationship of Teachers and Learners**

Learning is a collaborative process by which teachers and students interact, create, and share information. Collaborative groups use combinatorial strategies in problem solving, which facilitates the development of appropriate solutions. Interaction supports question refinement and reflection. It promotes a shared discourse that establishes a learner culture fostering cooperation and mutual interdependence. Since learning is situated in an authentic social process contingent on collective experience, collaboration is necessary. Because the learning task is supportive, challenging, and authentic, students are given an opportunity to tryout ideas from alternative viewpoints and in alternative contexts. In collaborative learning, interaction with peers provides motivation, support, encouragement, and assistance. The exchange of information and the challenges of facts and assumptions are part of this process. Groups confront ineffective strategies and misconceptions, helping individual learners to clarify their thinking. Collaboration shortens the technical learning curve by providing immediate feedback, assisting a learner in the extension of his/ her abilities, supporting the articulation of prior knowledge, and by the monitoring of overall progress (scaffolding: a process whereby experienced learners guide the less experienced in a learning conversation) (Vygotsky, 1978). Learning then becomes transformative, changing the knowledge structure of the learner to a higher level of performance. This empowers the learner and provides agency in the setting of project goals. The teacher's role is to coach, facilitate, support, and implement authentic product development processes.

A collaborative learning community has the following salient characteristics:

- shared vision and outcomes,
- an open, trusting, and caring culture,
- procedures for acknowledging members (both learners and instructors) participation and contributions to the community,
- supportive structures and policies to implement vision and facilitate change,
- a flexible design for change and for implementing research-based innovations,
- procedures for continual evaluation and assessment of success and failure,
- shared leadership and shared responsibility among all community members,
- opportunities for sustained professional development and collaborative reflective practice,
- time for members to work together to support each other and to facilitate change and learning,
- community procedures which allow for knowledgeable participation and conflict resolution,

- cross-gender, cross-cultural and cross-generational dialogue,
- authentic partnerships that expand the community and increase all members opportunities for learning,
- opportunities for learners to construct learning and to take responsibility for their own learning,
- motivational processes that help promote lifelong learning, and
- practices that are aligned to the community's core philosophy (Cooper & Boyd, 1996).

**Components of an Online Course**

An online course is an opportunity for distance learners to participate in course work that is more than just an electronic textbook. Computer mediated learning opens multiple pathways to an expanded universe through in depth exploration of content and ideas. CML offers multiple pathways of asynchronous learning based on the personalized needs and interests of the learner. Computer mediated learning can easily be nested in the Framework for Understanding Educational Encounters (Montgomery, 1987). Direct transmission of knowledge through the use of the text, *Talented Children and Adults* (Piirto, 1999), is only one avenue used in the course. Another pathway, the translation of knowledge, is incorporated when teachers and learners interact on established content by investigating hypertexts and links to the World Wide Web. Transformation occurs when knowledge is constructed by and among the learners involved, extending their appropriation and expanding their perspective. This universe of learning and knowledge is co-constructed by a community of learners based on multiple modes of representation of content to match each learner's unique level of experience and expertise.

The first step in construction of the online course is the development of the syllabus. An online syllabus resembles the traditional course syllabus, but includes links to other course components: threaded discussion and product databases, homepages, gifted resources, help desk information and library information. Table 1 contains excerpts from the online syllabus for the Introduction to Gifted course.

Table 1. Syllabus and Course Outline Excerpts

*Information About this Course--Catalogue Description*: Concepts, techniques, and strategies for providing differentiated educational programs and experiences for the gifted and talented. State and Federal legislation, development of gifts and talents, program types, identification systems, program development, materials development, teaching techniques, and methodologies.

*Prerequisite and Support Courses*: Prerequisites none. It is assume that most will have a background in education, however this is not necessary. Parents are welcomed and supported. Some basic familiarity with computers is assumed. You should be able to use a browser and to access this syllabus electronically.

*How to use this Syllabus*: Read the whole syllabus carefully. All of the information needed for this course (except the textbook) is included in the syllabus or in the pages linked to the syllabus. This includes all of the readings for the course. This material may be read online or downloaded and printed

*Course Outline/Description*: The focus will be collaborative. This implies that you will work with others critiquing their products and helping them build better materials. In this generation or cohort, you will develop materials that will be made available for future cohorts of students. The process to be developed is one of application in authentic situations. The focus is on the development of solutions to authentic problems encountered in working with gifted and talented learners.

*Course Structure*: This is an online computer mediated learning experience. You can logon at anytime and participate in the activities. When you read the textbook material, please take notes on any area that you do not understand or would like to discuss further. Discussion questions will be provided for each chapter. Respond to the questions that you choose (following the directions on the threaded database) and to the responses that your classmates make. If you have additional questions, you can post them for your classmates to answer in the threaded discussion. The instructor will respond to any unanswered questions and to student answers if alternative interpretations might be useful.

*Using the Discussion Questions:* The purposes of the discussion questions are (1) to highlight important materials in the text and to aid in the formulation of a stance on these issues, (2) to further the understanding of differentiated education, and (3) to aid in the familiarization of techniques, strategies, models and research in the field of gifted education. The point of the discussion questions is to provide discourse with others in the class. Questions are viewed as the singularly most effective manner in promoting knowledge acquisition (Shriever, 1991). Questions will be focused and open-ended (questions that have no predetermined right answer and cannot be answered with a yes or no). Questions will require the use of information from the text and will require proof of reasoning. A variety of ideas and interaction between students will be sought. Clarification and extension will be asked as needed.

*Additional Syllabus Components*: The syllabus contains the following headings:

- Title and What's New Page,
- How to Use this Syllabus,
- Textbook description, links to sign up for the course, instructor with bibliography/vita, teaching assistant, electronic office hours, and telephone numbers,
- Course goals and expected outcomes,
- Examinations and major assignment,
- Discussion questions, responses to peer responses, independent products, response to peer products, final projects, response to final projects,
- Grading scale, policy on incomplete grades, attendance policy, make up policy, add/drop policy, policy on withdrawals, statement on academic integrity, disabled student policy, statement to cover possible changes in the syllabus,
- Links to other places, how to use the Internet, hardware/software requirements, directions for email, help desk, class listserv, net etiquette,
- Guest presenters/volunteers, reading topics (Bull, Montgomery, & Kimball, 2000).

The next step involves the development of a threaded discussion database for asynchronous interactivity. Threaded discussion involves two or more learners interacting at different times through the use of threaded discussion databases, listserves, bulletin boards, etc. Learners may interact using email. This type of reflective approach enhances the learning experience. Learners have time to explore complex issues, consider alternatives, and craft responses. Asynchronous learning is convenient and adaptable.

Following the development of the threaded discussion database, is the creation of a product database. A multitude of authentic products and projects may be created as part of the course requirements. These products may then be posted on the database for review and use by fellow learners. The creation of authentic products facilitates motivation among gifted learners. Authentic products demonstrate the relevance of new leaning by creating materials for future use in classroom instruction. Products and projects might included the following:

- a program (computer or teaching), electronic reserves, a bookmark list, a web search, web quests, a class web page, or a web conference,
- real world examples, archives, glossaries, indexes, or a class reference collection,
- subject guides, primers, collections of solved problems, or group portfolios
- electronic journals, special interest groups, a class news group, and/or focus group to gather information,
- tutor programs, dialectical inquiry, or writing assistance labs,
- documents, searchable reference library, national electronic library, or annotated bibliography,
- prioritized list and timelines,
- a Delphi process, an interpersonal exchange (pen pal), or learning circles,
- journals and diaries, tutorials, (synchronous & asynchronous),
- a virtual tour, simulations, games, databases, or a synchronous panel discussion, role-play, debate, a structured controversy, or virtual field experience.

Materials like those above can be located for gifted students on the Internet and are described in Bull and Kimball (1999).

Others steps might include establishing a multigenerational archive. In this manner class participants aid in the creation of resources for future learners. Examples created by students are more on the level of new learners than teacher examples. If information for a class is collected and maintained in an electronic archive, each successive class or generation can build upon that foundation. After several generations, learners should be able to go farther and learn more. Generational curricula form a database that illustrates the development of communal knowledge. Collaborators may have no knowledge of one another, but may use each other's work to develop new perspectives. A persistent medium is required to store the positive aspects developed out of intergenerational practices for subsequent generations (James, 1997). Some types of generational strategies are annotating with hyperlinks, electronic coaching, creating cognitive maps, and critiquing of documents.

An especially important step is the creation of the homepage/s, the central nervous system of the online course. It is a basic site with links to all other components. An example of a course homepage can be found in instructional materials for the internet (Bull, 2000).

**Conclusion**

In conclusion, the promotion of promising practices in gifted education are extended through the use of computer mediated learning. Current theory, research, strategies, and techniques are now available to educators of gifted learners in rural areas. The Framework for the Understanding of Educational Encounters (Montgomery, 1987) provides a clear philosophical base for teachers to develop gifted programs that reflect the needs of their school or school district. Computer mediated learning provides access to multiple modes of content representation and is designed to be holistic, spiral, and readily available. An authentic learning experience is made available by providing a collaborative medium that can be shared by teacher and learners from the comfort of their own homes or offices. Teachers now have access to knowledge that will pave the way for innovative practices, the differentiation of curriculum (Tomlinson, 1995) and appropriate strategies for the education of students who have gifts, talents, or high potential. These teachers will claim ownership to the tools that will democratize education for these learners.

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